UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue, Suite 900
Seattle, Washington 98101-3140

DRAFT***September 17, 2008***DRAFT

Reply To
Attn Of: ECL-111

MEMORANDUM

SUBJECT: Updated Exit Strategy for Midway Landfill

FROM: Jonathan Williams
Remedial Project Manager

Ted Yackulic
Regional Attorney

TO: Howard Orlean
Acting Manager, Site Cleanup Unit 3

This memorandum transmits the latest Long Term Site Management Strategy for this site. The previous strategy, prepared by Judi Schwarz in August 2006, has been updated to include information obtained since then.

Site:	Midway Landfill
Site ID#:	WAD980638910
Location:	Kent, Washington
Type of Site:	Closed Municipal Landfill State Enforcement Lead, PRP Financed
Operable Unit(s)	One Operable Unit
Owner/Operator:	City of Seattle
Principal PRP:	City of Seattle
NPL List:	May 1986
ROD Date:	September 2000
Consent Decree:	May 1990 (under state law); amended February 2006
PCOR Date:	September 2000
Remedial Action Report:	none
1st Five-Year Review:	October 2005
2nd Five-Year Review:	Scheduled for September 2010
SCAP Targets:	2010 – Second 5-Year Review 2011 – Possible NPL Deletion

ACTIONS NEEDED TO DELIST

Remedy Performance Evaluation

The containment remedy constructed as an early remedial action in the early 1990's has been described in the initial (2005) five-year review performed by Ecology as successful in remediating the site. However, the five-year review does not provide information needed to ascertain that the landfill cover cap, leachate collection system, and methane gas collection system is adequately containing contaminated ground water. The next scheduled five-year review (2010) should critically evaluate the degree of hydraulic containment provided by the remedy, review the adequacy of the hydraulic head and ground water contaminant monitoring system, and also address issues identified in the 2005 five-year review.

Buried Refuse Stabilization Projection

To date, the landfill owner/operator has not projected when the landfill refuse can be expected to cease generating significant amounts of leachate and/or methane gas. Likewise, there has been not quantitative estimate rendered regarding how much land subsidence can be expected over time. This information would be needed in order to estimate when the entire site might be eligible for some type of re-use and eventual delisting.

A relatively small but commercially significant portion of the site might be eligible for development and/or de-listing soon. The February 2007 "Reuse Planning Report: Kent Highlands and Midway Landfills" prepared for Seattle City Utilities and EPA identified an approximately three-acre area along and near to Pacific Highway which is relatively flat, has excellent access, and does not contain buried refuse.

PAST FIVE-YEAR REVIEW SUMMARY

As of September 2005, Ecology concluded that the remedy has been effective in reducing the water within the landfill and that the concentrations of the contaminants of concern have generally remained stable or decreased over the past five years, though levels of some contaminants of concern remain above cleanup levels.

The 2005 five-year review appears to assume that 1) the remedy was constructed to contain all of the site refuse-contaminated ground water, and 2) the hydraulic head and contaminant concentration monitoring well system is adequately designed to evaluate hydraulic and chemical containment. If these assumptions can be verified, then continued long-term monitoring of hydraulic heads and ground water quality may be sufficient along with existing institutional controls to demonstrate and maintain remedy protectiveness. If not, then additional measures might be necessary.

The following items were identified in 2006 as needing to be completed and documented before EPA could consider taking the Midway Landfill site off the NPL.

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- Groundwater down-gradient of the landfill needs to meet the cleanup levels established in the 2000 ROD, or in the case of vinyl chloride, as slightly modified by Ecology. Cleanup levels have been established for three contaminants: 1,2-dichloroethane [5 ug/L]; vinyl chloride [in the ROD –PQL based 0.2 ug/L, now 0.29 ug/L (see 2005 five year review)]; and manganese [2.2mg/L]. If other contaminants resulting from releases from the landfill are found in any down gradient monitoring well, cleanup levels, if necessary, will need to be established for these additional contaminants using the federal drinking water standards and MTCA.

- The point of compliance for the groundwater is at the edge of the landfill waste as specified in a Compliance Monitoring Plan to be approved by Ecology. All groundwater down gradient of this point of compliance will need to meet these cleanup levels for contaminants resulting from releases from the landfill before the Midway Landfill is removed from the Superfund National Priorities List.

As of the five year review in 2005, three down gradient wells to the east of landfill in the Southern Gravel Aquifer slightly exceeded the ROD cleanup levels. One of these wells is directly adjacent to landfill and the other two are located approximately 600 feet and 1200 feet east of the southeastern corner of the landfill. The well closest to the landfill had lower VOC concentrations than the two wells further away. All of these wells met the manganese cleanup level. There is another Southern Gravel Aquifer monitoring well adjacent to the landfill on the east site which may be either up gradient or down gradient. (There is a groundwater divide in the area of the landfill.) Manganese is roughly two times the ROD cleanup level in this well, but all VOC cleanup levels were met in 2004 sampling. Vinyl Chloride was below the MCL in all down gradient wells sampled and 1,2-dichloroethane was detected with a maximum concentration of 6.5 ug/l is only slightly above the MCL.

The proprietary institutional control requirements established in the ROD have been put in place. These institutional controls include both legal controls (permanent notices regarding the landfill itself in the county real estate records, as well as enforceable assurances that the O&M of the containment and monitoring systems will continue if the ownership or control of the property changes.) The ROD also required an educational IC in the form of annual notices to well-drillers active in the area. The five year review disclosed that this notice has not been sent regularly in the past, but the problem has probably been remedied as a result of the five year review.

RPM WORDLOAD REQUIREMENTS AND SCHEDULES

This site has been completely managed by Ecology. This arrangement was established in a Cooperative agreement between Ecology and EPA. No monitoring data has been

routinely submitted to EPA. Seattle Public Utilities, the landfill closed landfill owner/operator, has agreed to provide both EPA and Ecology with a copy of the 2007 annual ground water monitoring summary report which is scheduled for release in September 2008.

The next five year review is due in September 2010. Ecology performed the five year review, consistent with the ROD expectation, in 2005. EPA will need to remind Ecology of this requirement during the Ecology/EPA work planning meeting for the FY 2010 year. Further, EPA's expectations regarding the scope of the next five-year review may be challenging to Ecology, and lead to a request for additional EPA resources.

The EPA RPM should annually obtain and review the ground water monitoring summary reports, and talk to Ecology about the monitoring data trends (such as when preparing annual updates of this exit strategy), the effectiveness of the ICs, and the latest developments on site re-use, and to see if any other issues have arisen.

Ecology is expected to continue to be the lead regulatory agency overseeing performance of the selected remedial action by the City of Seattle.

BACKGROUND

The Midway Landfill is a closed landfill located in Kent, WA, between Interstate-5 (I-5) and Highway 99 (Pacific Highway). The landfill is approximately 60 acres in size with refuse buried on about 40 acres and at depths up to more than 100 feet. The landfill is owned by the City of Seattle.

Land use in the landfill vicinity consists primarily of commercial activities and residential areas. Commercial establishments and light industry and manufacturing border both sides of Highway 99 in the area. Most of the nearby residences are detached single-family dwellings, with some multi-unit residential developments to the south and west. Several mobile home parks are also in the vicinity. Municipal water systems serve the area and there are no private wells in use in the area of groundwater contamination from the landfill.

From 1945 to 1966, the site of the current Midway Landfill was operated as a gravel pit. In 1966, the City of Seattle leased the site and began using it as a landfill. From 1966 to 1983, approximately three million cubic yards of solid waste were deposited there.

When the City closed the landfill in the fall of 1983, it began extensive testing of water and gas in the landfill and its vicinity. This sampling disclosed the presence of organic and inorganic contaminants outside the landfill boundary. Beginning in September 1985, the City of Seattle constructed gas migration control wells within the landfill property and gas extraction wells beyond the landfill property to control subsurface migration of gas. Gas found to have migrated up to 2600 feet beyond the landfill prior to installation of the gas extraction system.

In September 1988, the City of Seattle agreed to prepare an RI/FS under a Response Order on Consent with Ecology. In May 1990, prior to completion of the RI/FS, the City and Ecology entered into a consent decree pursuant to State of Washington Model Toxics Control Act (MTCA.) In this consent decree, the City of Seattle agreed to finance and perform the following cleanup work:

- Construction of a multi-layer landfill cover. The landfill cover was designed to greatly reduce the amount of rain that would seep into the landfill and to control the post-closure escape of hazardous emissions from the landfill.
- Completion of a gas extraction, flare, and monitoring system
- Completion of a surface water management system to prevent surface water from the surrounding area from infiltrating the landfill
- Preparation of a comprehensive operation and maintenance manual

The consent decree also required the City to place a notice in the country property records.

Because of the remedial work performed by the City of Seattle between 1985 and 2000, environmental conditions had greatly improved prior to EPA's ROD. The City of Seattle completed construction of the landfill cover, landfill gas extractions system, and surface water management system in November 1992. The landfill is fenced and access is limited. A gas extraction system is in place and operating throughout the landfill. Because of these actions, potentially explosive landfill gas does not leave the landfill property and the quality of the groundwater leaving the landfill has greatly improved. A comprehensive operation and maintenance manual for both short-term and long-term operation and maintenance for the systems constructed under the consent decree was prepared by the City of Seattle, and was approved by Ecology in April 1992.

The City of Seattle's cleanup work, including the work done in response to the 1990 consent decree between the City and Ecology, had successfully reduced the environmental problems at the landfill. Therefore, the remedy selected in the EPA 2000 ROD incorporated elements required in the 1990 consent decree between City and Ecology, and added some elements to ensure that containment measures already in place are monitored and maintained, and expanded the institutional controls to ensure the long-term protectiveness of the remedy. The selected remedy also sets groundwater cleanup standards, as described above on page 2.

The remedy selected in the 2000 EPA ROD for the Midway Landfill site consists of:

- Monitoring to ensure the remedial systems are working as designed and that progress is being made towards meeting the groundwater cleanup standards
- Continued operation and maintenance of all remedial project elements required in the Ecology/City of Seattle 1990 consent decree, including the gas collection system, the multilayered cap, and the storm water collection system.
- Implementing institutional controls as described below and in the ROD

Ecology and the City of Seattle anticipated amending the 1990 consent decree within six months after the EPA ROD was signed to reflect these and other remedial issues. The final amendment to the consent decree was signed by Ecology and the City in December 2005 and by the judge in February 2006.

INSTTUTIONAL CONTROLS

The City of Seattle has operational control of the landfill site. The site is fenced and access is controlled.

The remedy selected in the ROD included three types of institutional controls. Variations of the first two types of institutional controls were already required in the 1990 consent decree.

First, the City of Seattle will place a notice in the records of real property kept by the King County auditor, alerting any future purchaser of the landfill property, in perpetuity, that this property had been used as a landfill and was on the EPA's National Priorities List, and that future use of the property is restricted. This is a minor change from the requirements in the 1990 consent decree. This has now been implemented: The signed and notarized Declaration of Restrictive Covenant MTCA Use Restrictions (WAS 173-340-440) was recorded in the county offices on July 13, 2005 and includes all the requirements set forth for this notice in the ROD.

Second, the City needs to ensure continued operation and maintenance of the containment and monitoring systems if any portion of the property is sold, leased, transferred or otherwise conveyed. This requirement is an element of the 1990 consent decree.

Third, notices are needed to that no water supply wells are constructed and used in areas with groundwater contamination emanating from the landfill. These notices shall include at a minimum the following:

The City will annually notify the Seattle-King county Department of Public Health, Ecology, the local water districts (currently, the Kent and Highline Water Districts) and locally active well drillers in writing of groundwater conditions in the affected areas down gradient of the landfill. This notice will include a map showing the location of the affected areas and indicate which aquifers are affected and their elevations. This information shall be updated annually and can be part of an annual groundwater monitoring report. Locally active well drillers are all well drillers that have drilled wells within King County in the year prior to the notice. Ecology will provide the list of locally active well drillers to the City. This requirement for annual notices can be removed or modified by Ecology after groundwater cleanup standards have been met in the groundwater monitoring wells down gradient from the landfill.

The City of Seattle will also annually notify owner of one particular well (Well #37) in writing of groundwater conditions in the area of the well. Alternatively, the City of Seattle can provide to Ecology adequate assurances that this well has been properly abandoned.

The five year review process disclosed that the city had not sent out notices to well drillers nor performed related informational ICs required by the ROD. The city sent out the first notices on July 22, 2005 and copies are in the 2005 five year review report.

As an additional protection, state regulations forbid any private drinking water wells within 1,000 feet of a municipal landfill or 100 feet from all other sources or potential sources of contamination (WAC 173-160-171.) State regulations (WAC 173-160-151) also require a property owner, agent of that owner, or a water well operator to notify Ecology of their intent to begin well construction prior to beginning work. This notification requirement should ensure that Ecology staff which regulate water well drilling and completion would be advised if anyone plans to construct a water well near Midway Landfill.

O&M ISSUES

Ecology has not alerted EPA to any O&M issues, except for those related to the I-5 widening protect (see below.) The only active system is the gas collection and destruction system and the City says this has been operating smoothly.

COMMUNITY RELATIONS

For the past 15 years or so, there has been very little community interest in Midway Landfill. Community interest was very high in the 1980's when potentially explosive levels of methane were found in homes surrounding the landfill. Since that time, the city purchased the affected home, and the landfill gas has been confined to the landfill, and these homes have been re-sold by the city. There was an extensive mailing to the community announcing EPA's proposed plan in 2000 – and the few questions and comments received from the community related to exactly where the ground water was or was not contaminated. Ecology did publish a notice announcing that a five year review would be taking place and received no comments. No calls have been received by the EPA RPM from the public over the past year.

REDEVELOPMENT CONSIDERATIONS

Land Use: Currently, the landfill is capped and fenced. No public access is allowed. Future land use was the subject of an extensive but preliminary 1992 study by community representatives, the City of Kent, and the City of Seattle. Some possible uses considered desirable by the midway Citizens Advisory committee include open space uses such as a passive park, a sports complex with ball fields, or garden center. Less desirable but potentially possible future uses would be a golf driving range or a park-and-ride facility. All uses would need to be designed to protect the integrity of the cap and other containment systems.

Beginning in May 2006, EPA's Brownfields Unit coordinated an eight-month land-use evaluation and planning study that included staff from the City of Seattle and the City of Kent. The February 2007 Reuse Planning Report (prepared by E2 Inc. for Seattle Public Utilities and EPA) identified characteristic zones A through F as follows:

Zone A: 14 acres which includes the site's methane gas flaring station and stormwater retention pond.

Zone B: Four acres without buried garbage and "minimal" remedy components.

Zone C: Seven acres where buried garbage is found up to 50-60 feet below the land surface, and subsidence is likely to be less than areas where refuse is thicker and extends deeper.

Zone D: 23 acres characterized by buried refuse up to about 90 feet deep and "extensive" remedy components on the land surface.

Zone E: 14 acres where buried garbage extends beyond 90 feet deep, subsidence is thus expected to be the greatest, and a "moderate" number of remedy components are found on the land surface.

Zone F: Nine acres which are within the Interstate 5 right-of-way owned by the Washington State Department of Transportation. This area includes about 1850 feet of the underground leachate collection system which has been installed up to the present roadway footprint. Approximately 900 feet of the methane collection system is within the WSDOT right-of-way and about 150 feet from the freeway.

The report concluded that an approximately three-acre area along Pacific Highway could be developed for commercial use if the methane flaring station were moved. Another two acres is suggested as acceptable for land uses such as surface parking, outdoor storage, and recreational areas.

The Seattle Public Utility staff member responsible for future land-use at the site is Sean McDonald. He can be reached at (206) 684-7652. As of August 2008, Sean said that the City of Kent is evaluating its long-term land-use plans and, at a later date, will be providing information to SPU which might allow taking steps to facilitate appropriate development on part of the site. The City of Kent planner with responsibility for the Midway Landfill area is Gloria Gould-Wessen.

The eastern side of the capped landfill is being affected by an I-5 expansion project. According to the Ecology site manager, the City of Seattle signed an agreement with Washington DOT and Ecology which obligates the City to remove buried garbage within the highway right-of-way and pay all removal costs. (Clean backfill for construction purposes, in contrast, might be DOT's responsibility.) EPA has not determined whether or

not this work would affect Monitoring Well 14, which is one of the key monitoring wells. As of August 20, 2008, Ecology's Site Manager said that the I-5 work was stalled, and referred EPA's RPM to the City of Seattle for an explanation. The Seattle Public Utilities contact, Jeff Neuner, reported in September 2008 that there is currently no state funding for the planned (SR-509 extension to join I-5) highway construction project. The City is not planning to conduct buried refuse removal within the Interstate right-of-way until highway construction funds are available to DOT .

Groundwater uses: To the best of Ecology's and the City's knowledge, no one is drinking the groundwater from any aquifer within almost a mile of the landfill, and there are no current plans to use the groundwater near the landfill for drinking water. The closest wells currently in use for drinking water are the Lake Fenwick wells almost 1 mile southeast of the Midway Landfill.

SPECIAL ISSUES OF INTEREST

EPA's role in the Midway Landfill site is somewhat unique. All major construction at the site was completed in the early 1990's, but the site could not be considered "construction complete" until a decision document was completed. While the cleanup has always been managed by Ecology under their state authorities, Ecology was having problems completing a draft CAP because of differences in opinion between the city and Ecology, as well as workload issues. Therefore, with Ecology's support, an EPA CERLCA ROD was eventually prepared and signed in September 2000. Ecology has continued to be the lead agency after the ROD.

It may be important to remember that the criteria for removing a site from the NPL is different than the criteria for removing a site from Ecology's Sites List and that removing a site from one list does not require removing a site from the other list. A couple years ago the city was very, very interested in getting Midway off the NPL and may be very helpful and cooperative on this issue in the future.

In the 1980's and 1990's, groundwater contamination was discovered to the north and northwest of the landfill. While early site documents suspected that the source of this contamination was Midway Landfill, later geohydrology work demonstrated that this groundwater was up gradient from the landfill and that the landfill is not likely to be the source of this contamination. Because of this issue, the ROD clearly sates that: "For the purposes of this ROD and potential future deletion of this site from EPA's National Priorities List, the Midway Landfill "site" is the landfill area containing waste, and all down gradient contaminated groundwater resulting from releases from the landfill. Several potential up gradient groundwater sources have been identified but are not included within the "site" and are not addressed by this ROD."

One of the City's continuing concerns is that up-gradient contaminated groundwater which then flows through the landfill will never allow groundwater down-gradient from the landfill to meet cleanup standards. (This stated concern suggests that hydraulic and

chemical containment at the landfill may be insufficient.) The ROD states that if in the future the City wants to demonstrate that it is technically impracticable for them to meet the cleanup standards at every down gradient well because of up-gradient sources, EPA and Ecology will work together with the City to determine what information is needed to support such a demonstration. EPA's technical impracticability (TI) waiver guidance requires that sources of contamination be investigated and a rigorous determination made that cleanup cannot occur within a reasonable timeframe.

Because the up-gradient groundwater monitoring wells contain higher concentrations than the down gradient monitoring wells, Ecology did commit, in the five year review, to investigate and clean up the up gradient sources of the VOC contamination, with a milestone date of 2010. They were going to begin by notifying the up gradient property owners by September 2006. As of September 2008, Ecology's site manager reported that the suspected up-gradient source areas were being "watched" but no formal investigation had been conducted.

Based on (now retired) Judi Schwarz's conversation with Ching-Pi Wang over the years, oversight of this site seems to be a low priority to Ecology. For example, it appears that Ecology had not been regularly looking at the monitoring data. Accordingly, EPA has contacted Jeff Neuner at the City of Seattle and asked that a copy of the 2007 annual ground water monitoring report (due to be produced September 2008) be provided directly to EPA.

OTHER EPA STAFF WITH SOME KNOWLEDGE OF THE SITE

Neil Thompson (retired) and Andrea Lindsay were extensively involved in the mid-1980's response to the gas migration into the community. (Andrea was involved prior to working for EPA. Likewise, civil investigator Gretchen Schmidt was involved at the site from a community-concern standpoint prior to joining EPA.) Judi Schwarz was involved in EPA's decision to write a CERCLA ROD in 2000, and wrote the ROD.

CONTACTS

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As of September 2008, the state AG was Andy Fitz.

I have reviewed and concur with the information presented here within.

_____ _____
Unit Manager Date

Yearly Updates Date

☐ CPRM _____

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